

DOCKET NO.: GLIS-0143
Application No.: 10/024,818
Office Action Dated: April 22, 2004

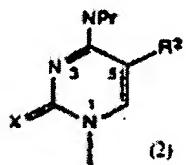
**PATENT
REPLY FILED UNDER EXPEDITED
PROCEDURE PURSUANT TO
37 CFR § 1.116**

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claims 1-138 (Canceled).

139. (Previously Presented) A method of detecting the presence, absence or amount of a particular single-stranded DNA or RNA or a particular target duplex in a sample comprising:
selecting an oligomer having at least one base of formula (2):



wherein each X is independently O or S;

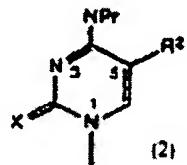
R² is a group comprising at least one pi bond connected to the carbon atom attached to the base; and

Pr is (H)₂ or a protecting group; and

using said oligomer to detect said DNA, RNA or target duplex.

140. (Previously Presented) The method of 139 wherein said oligomer is used for quantitating the amount of said DNA, RNA or target duplex in said sample.

141. (Previously Presented) A method of performing a polymerase chain reaction (PCR) to amplify a target sequence comprising including in a PCR assay mixture an oligomer having at least one base of formula (2):



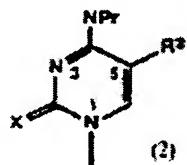
wherein each X is independently O or S;

R² is a group comprising at least one pi bond connected to the carbon atom attached to the base; and

Pr is (H)₂ or a protecting group; and
effecting a polymerase chain reaction to amplify said target sequence.

142. (Previously Presented) The method of claim 141 further including a Taq polymerase in said PCR assay mixture.

143. (Previously Presented) A method of performing a nucleic acid amplification protocol to amplify a target nucleic acid comprising including in an assay mixture an oligomer having at least one base of formula (2):



wherein each X is independently O or S;

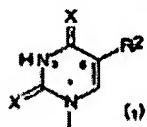
R² is a group comprising at least one pi bond connected to the carbon atom attached to the base; and

Pr is (H)₂ or a protecting group; and
effecting a protocol to amplify said target nucleic acid.

144. (Previously Presented) A method of claim 143 wherein said protocol includes hybridization of said oligomer to said target nucleic acid.

145. (Currently Amended) A method of detecting the presence, absence or amount of a particular single-stranded DNA or RNA or a particular target duplex in a sample comprising:

selecting an oligomer having at least one base of formula (1):



wherein each X is independently O or S;

R² is cyano; C₂₋₁₂ 1-alkenyl; C₂₋₁₂ 1-alkynyl; a C₂₋₁₂ heteroaromatic group containing 5-6 ring atoms in which one to three of the ring atoms is N, S or O; phenylethynyl; 2-, 3- and 4-pyridine-ethynyl; 2-, 4-, and 5-pyrimidine-ethynyl; triazine-ethynyl; 2-, 4-, or and 5-pyrimidinyl; 2-, 4-, or and 5-oxazolyl-ethynyl; 2-, 4-, or and 5-thiazolyl-ethynyl; 1-methyl-2-imidazolyl; 2- or and 4- imidazolyl; 2-, 4- or and 5-oxazolyl; 2-, 4-, or and 5-imidazolyl-ethynyl; 2-, 3- or and 4-pyridinyl; 2- or and 3-thienyl-ethynyl; 2- or and 3-furanyl-ethynyl; 2- or and 3-pyrrolyl-ethynyl; 2- or and 3-thienyl; 2-, 4-, or and 5-oxazolyl; 2- or and 3-furanyl; 2- or and 3-pyrrolyl; propenyl; vinyl; bromovinyl; -C≡C-Z where Z is H, C₁₋₁₀ alkyl, C₁₋₁₀ haloalkyl (with 1-6 halogen atoms), or C₁₋₁₀ heteroalkyl (with 1-3 heteroatoms); 3-buten-1-ynyl; 3-methyl-1-butynyl; 3,3-dimethyl-1-butynyl; 1,3-pentadiynyl; 1-butynyl; ethynyl; and

[Pr is (H)₂ or a protecting group; and]

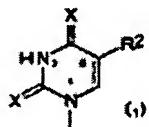
using said oligomer to detect said DNA, RNA or target duplex.

146. (Previously Presented) The method of 145 wherein said oligomer is used for quantitating the amount of said DNA, RNA or target duplex in said sample.

147. (Previously Presented) The method of claim 145 wherein R² is C₂₋₈ 1-alkenyl.

148. (Previously Presented) The method of claim 145 wherein R² is C₂₋₈ heteroaromatic.

149. (Currently Amended) A method of performing a polymerase chain reaction (PCR) to amplify a target sequence comprising including in a PCR assay mixture an oligomer having at least one base of formula (1):



wherein each X is independently O or S;

R² is cyano; C₂₋₁₂ 1-alkenyl; C₂₋₁₂ 1-alkynyl; a C₂₋₁₂ heteroaromatic group containing 5-6 ring atoms in which one to three of the ring atoms is N, S or O; phenylethynyl; 2-, 3- and 4-pyridine-ethynyl; 2-, 4-, and 5-pyrimidine-ethynyl; triazine-ethynyl; 2-, 4-, or and 5-pyrimidinyl; 2-, 4-, or and 5-oxazolyl-ethynyl; 2-, 4-, or and 5-thiazolyl-ethynyl; 1-methyl-2-imidazolyl; 2- or and 4- imidazolyl; 2-, 4- or and 5-oxazolyl; 2-, 4-, or and 5-imidazolyl-ethynyl; 2-, 3- or and 4-pyridinyl; 2- or and 3-thienyl-ethynyl; 2- or and 3-furanyl-ethynyl; 2- or and 3-pyrrolyl-ethynyl; 2- or and 3-thienyl; 2-, 4-, or and 5-oxazolyl; 2- or and 3-furanyl; 2- or and 3-pyrrolyl; propenyl; vinyl; bromovinyl; -C≡C-Z where Z is H, C₁₋₁₀ alkyl, C₁₋₁₀ haloalkyl (with 1-6 halogen atoms), or C₁₋₁₀ heteroalkyl (with 1-3 heteroatoms); 3-butene-1-ynyl; 3-methyl-1-butynyl; 3,3-dimethyl-1-butynyl; 1,3-pentadiynyl; 1-butynyl; ethynyl; and

[Pr is (H)₂ or a protecting group; and]

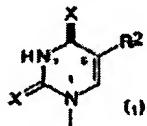
effecting a polymerase chain reaction to amplify said target sequence.

150. (Previously Presented) The method of claim 149 further including a Taq polymerase in said PCR assay mixture.

151. (Previously Presented). The method of claim 149 wherein R² is C₂₋₈ 1-alkenyl.

152. (Previously Presented) The method of claim 149 wherein R² is C₂₋₈ heteroaromatic.

153. (Currently Amended) A method of performing a nucleic acid amplification protocol to amplify a target nucleic acid comprising including in an assay mixture an oligomer having at least one base of formula (1):



wherein each X is independently O or S;

R² is cyano; C₂₋₁₂ 1-alkenyl; C₂₋₁₂ 1-alkynyl; a C₂₋₁₂ heteroaromatic group containing 5-6 ring atoms in which one to three of the ring atoms is N, S or O; phenylethynyl; 2-, 3- and 4-pyridine-ethynyl; 2-, 4-, and 5-pyrimidine-ethynyl; triazine-ethynyl; 2-, 4-, or and 5-pyrimidinyl; 2-, 4-, or and 5-oxazolyl-ethynyl; 2-, 4-, or and 5-thiazolyl-ethynyl; 1-methyl-2-imidazolyl; 2- or and 4- imidazolyl; 2-, 4- or and 5-oxazolyl; 2-, 4-, or and 5-imidazolyl-ethynyl; 2-, 3- or and 4-pyridinyl; 2- or and 3-thienyl-ethynyl; 2- or and 3-furanyl-ethynyl; 2- or and 3-pyrrolyl-ethynyl; 2- or and 3-thienyl; 2-, 4-, or and 5-oxazolyl; 2- or and 3-furanyl; 2- or and 3-pyrrolyl; propenyl; vinyl; bromovinyl; -C≡C-Z where Z is H, C₁₋₁₀ alkyl, C₁₋₁₀ haloalkyl (with 1-6 halogen

atoms), or C₁₋₁₀ heteroalkyl (with 1-3 heteroatoms); 3-buten-1-ynyl; 3-methyl-1-butynyl; 3,3-dimethyl-1-butynyl; 1,3-pentadiynyl; 1-butynyl; ethynyl; and
[Pr is (H)₂ or a protecting group; and]
effecting a protocol to amplify said target nucleic acid.

154. (Previously Presented) A method of claim 153 wherein said protocol includes hybridization of said oligomer to said target nucleic acid.

155. (Previously Presented) The method of claim 153 wherein R₂ is C₂₋₈ 1-alkenyl.

156. (Previously Presented) The method of claim 153 wherein R₂ is C₂₋₈ heteroaromatic.